



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/892,879 | 06/28/2001 | Gi Hong Kim | 8733.446.00 | 3042 |

30827 7590 06/18/2003
MCKENNA LONG & ALDRIDGE LLP
1900 K STREET, NW
WASHINGTON, DC 20006

EXAMINER

NGO, HUYEN LE

ART UNIT PAPER NUMBER

2871

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/892,879

Applicant(s)

KIM ET AL.

Examiner

Julie-Huyen L. Ngo

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-46 is/are pending in the application.

4a) Of the above claim(s) 2, 12-17, 21, 24-26, 28, 30, 31, is/are withdrawn from consideration.

5) ☐ Claim(s) ____ is/are allowed.

6) ☒ Claim(s) 1, 3-11, 18-20, 22, 23, 27, 29, 32, 33, 36, 38, 40, 42, 45 and 46 is/are rejected.

7) ☒ Claim(s) 4-11, 19, 22, 23, 33, 36, 38, 40 and 42 is/are objected to.

8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group A in Paper No. 6 is acknowledged.

However, Applicant fails to distinctly and specifically point out the supposed errors in the restriction requirement and to show that the species are obvious variants; therefore, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The elected species reads on claims 1, 3-11, 18-20, 22-23, 27, 29, 32-33, 36, 38, 40, 42, 45 and 46; and Fig. 4A.

Accordingly, claims 2, 12-17, 21, 24-26, 28, 30, 31, 34, 35, 37, 39, 41, 43 and 44 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim.

Priority

Receipt is acknowledged of paper submitted under 35 U.S.C. 119(a)-(d), which paper has been placed of record in the file.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The abstract of the disclosure is objected to because it not clearly states which is new in the art to which the claims are pertained. See MPEP § 608.01(b)

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter recited in claim 38 regarding the step of forming at least one additional shielding layer on the first substrate under at least one of the data electrodes 104. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). It appears from figure 4a, which shows only ONE shielding layer 215a formed under the middle data electrode 214.

Correction is required.

Claim Objections

Claims 4-11, 19, 22, 23, 33, 36, 38, 40, and 42 are objected to because the term "a shielding layer" is unclear of what the layer is shielded. It would be proper to recite it as __ a light shielding layer __.

Claim 10 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claim 10 is objected to since claim 1, which claim 10 is depended from, does not recite any shielding layer under neither the data electrodes nor common electrodes. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claims 32 and 33 are objected to because the sequence of forming different elements and layers of the in-plane switching liquid crystal device is improper. It appears from fig. 4A that the light shielding layer 215a/b should be formed on the substrate before any of the data or common electrodes are formed.

Claim 33 is objected to because there should be more than one shielding layers in order for the step of forming a plurality of data electrodes on the first protective film be corresponding to areas between the shielding layers.

Claim 36 is objected to because how can the outermost ones of the plurality of common electrodes in the unit pixel be substantially formed vertically aligned with a shielding layer. It appears from the fig. 4a that the outermost ones of the plurality of common electrodes in the unit pixel are substantially vertically aligned with corresponding shielding layers.

All claims that are depended from the above-mentioned claims and are not specifically discussed above are objected as bearing the defects of the claims from which they depend.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 is unclear of which shielding layer Applicant is referred to since there are at least two shielding layers recited in claim 7, which claim 8 is depended from.

Claims 33, 36, 38, 40 and 42 are and are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are:

Claim 33 omits to recite the step of forming the shielding layer(s) on the insulation film. Also this step should be formed before the step of forming the data lines and or data electrodes.

Claims not specifically mentioned above are rejected as bearing the defect(s) of the claim(s) from which they depend.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 4, 7, 10, 11, 18, 19, 20, 22, 23, 27, 29 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by SHIBAHARA (JP411271810A).

SHIBAHARA teaches (Figs. 3 and 7) an in-plane switching liquid crystal display device comprising:

(Claims 1 and 18)

- first and second substrates 101/201
- a plurality of data lines 103 on the first substrate
- a plurality of gate lines 102 perpendicular to the data lines and crossing the data lines on the first substrate
- a plurality of pixel areas on said first substrate defined by the data and gate lines;

- data electrodes 104 and common electrodes 105 alternately formed in each of said pixel areas,
- the data electrodes having a first transmittance area and the common electrodes having a second transmittance area, wherein the first transmittance area equals the second transmittance area;
- a liquid crystal layer 300 between said first and second substrates

(Claims 4, 7 and 19)

- at least one shielding layer 111 on the first substrate under at least one of the common electrodes 105 (claims 4 and 7)
- at least one additional shielding layer 111 on the first substrate under at least one of the data electrodes 104 (claims 7 and 19).

wherein

- the data electrodes 104 and the common electrodes 105 are on different layers (claim 3)
- a number of common electrodes having no shielding layer there under are equal to a number of data electrodes having no shielding layer there under (claim 10).
- said shielding layer is formed under said outermost one of said common electrodes 105 (claims 11 and 22-23)
- the data electrodes 104 and the common electrodes 105 are on different layers are formed on planes different from each other (claim 20)
- an insulation film 120 is formed on the data electrodes 104 (claim 27).

Art Unit: 2871

- said data electrodes 104 and said common electrodes 105 are a tripe type (claim 29).

With respect to claim 32, SHIBAHARA teaches (Figs. 3 and 7) a method of manufacturing an in-plane switching liquid crystal display device comprising:

- preparing the first and second substrates 101/201;
- forming a plurality of gate lines 102 and data lines 103 on the first substrate to define a plurality of pixel areas;
- forming a plurality of display/data electrodes 104 and reference/common electrodes 105 to be alternately formed in each pixel area and having the same light transmitting area;
- forming a liquid crystal layer 300 between the first and second substrates

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over SHIBAHARA (JP411271810A) as applied above to claims 1, 4 and 7, and further in view of Kakuda et al. (US5162933A).

Kakuda et al. teach (Figs. 3-4, col. 7, lines 8-17) forming the light blocking/shielding layers 18, the data lines 11 and the gate lines 13 of aluminum (Al), tungsten (W), molybdenum (Mo), chromium (Cr), tantalum (Ta), titanium (Ti), etc. Aluminum (Al) is particularly suitable for the data lines 11, gate lines 13 and light shielding layers 18 because of it is low in electric resistance and high reflectivity of light, thus suitable for blocking or shielding of light.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ Al as the same material for the shielding layers 111, the data lines 103 and the gate lines 102 in manufacturing SHIBAHARA in-plane switching liquid crystal display device for low electric resistance and high reflectivity of light, as taught by Kakuda et al.

Claims 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over SHIBAHARA as applied to claim 32 above and further obvious as follow:

It is well known and conventional in the art for data electrodes and common electrodes to be formed of a transparent conductive material of ITO for high transmittance and low resistance.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a method of manufacturing an in-plane switching liquid crystal display device as SHIBAHARA disclosed with the data electrodes and the common electrodes formed of a transparent conductive material of ITO for high transmittance and low resistance.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Niwano et al. (US6452656B2) disclose (Figs. 31a-b) a plane switching liquid crystal displaying apparatus for improved luminance with common electrode 6 forming over a light shielding 60.

Lee et al. (US6133977A) disclose (FIG. 7) an in-plane switching mode liquid crystal display, wherein the second portion 64 of the first data line 60 is divided into two light-shield strips 64, the two light-shield 64 overlap both edges of the second data line 80 via the passivation layer 70, and edges of the adjacent two common electrodes 12 adjacent to the first and second data lines 60 and 80 via the gate insulating layer 30.

Kim et al. (US6111627A) disclose an in-plane switching mode liquid crystal display with pixel electrodes formed above common electrodes.

Shakamoto et al. (US6069678A) disclose a liquid crystal display with data line electric field shield utilizing common electrode.

Allowable Subject Matter

Claim 33 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims; and to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth above in this Office action.

Claim 36, 38, 40 and 42 would be allowable if rewritten to overcome the objection(s) and/or rejection(s) under 35 U.S.C. 112, second paragraph, set forth above in this Office action.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 33, 36, 38, 40 and 42 would be allowable because there is no prior art of record that either teaches or suggests forming an in-plane switching LCD device comprising the steps of:

- forming a plurality of data electrodes 104 on the first protective film corresponding to areas between the shielding layers;
- forming common electrodes 105 on the second protective film corresponding to areas between adjacent data electrodes;
- outermost ones of the plurality of common electrodes in the unit pixel are substantially vertically aligned with the corresponding shielding layers (claim 36)
- forming one shielding layer on the first substrate under the middle data electrode 104 (claim 38).

Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Julie-Huyen L. Ngo whose telephone number is (703) 305-3508. The Examiner can normally be reached on T-Friday.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Mr. Robert H. Kim can be reached at (703) 305-3492.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

June 12, 2003

Julie-Huyen L. Ngo
Patent Examiner
Art Unit 2871